

No. 880,411.

PATENTED FEB. 25, 1908.

H. F. SMITH.
PROCESS OF FEEDING FUEL INTO GAS PRODUCERS.

APPLICATION FILED MAR. 29, 1907.

2 SHEETS—SHEET 1.

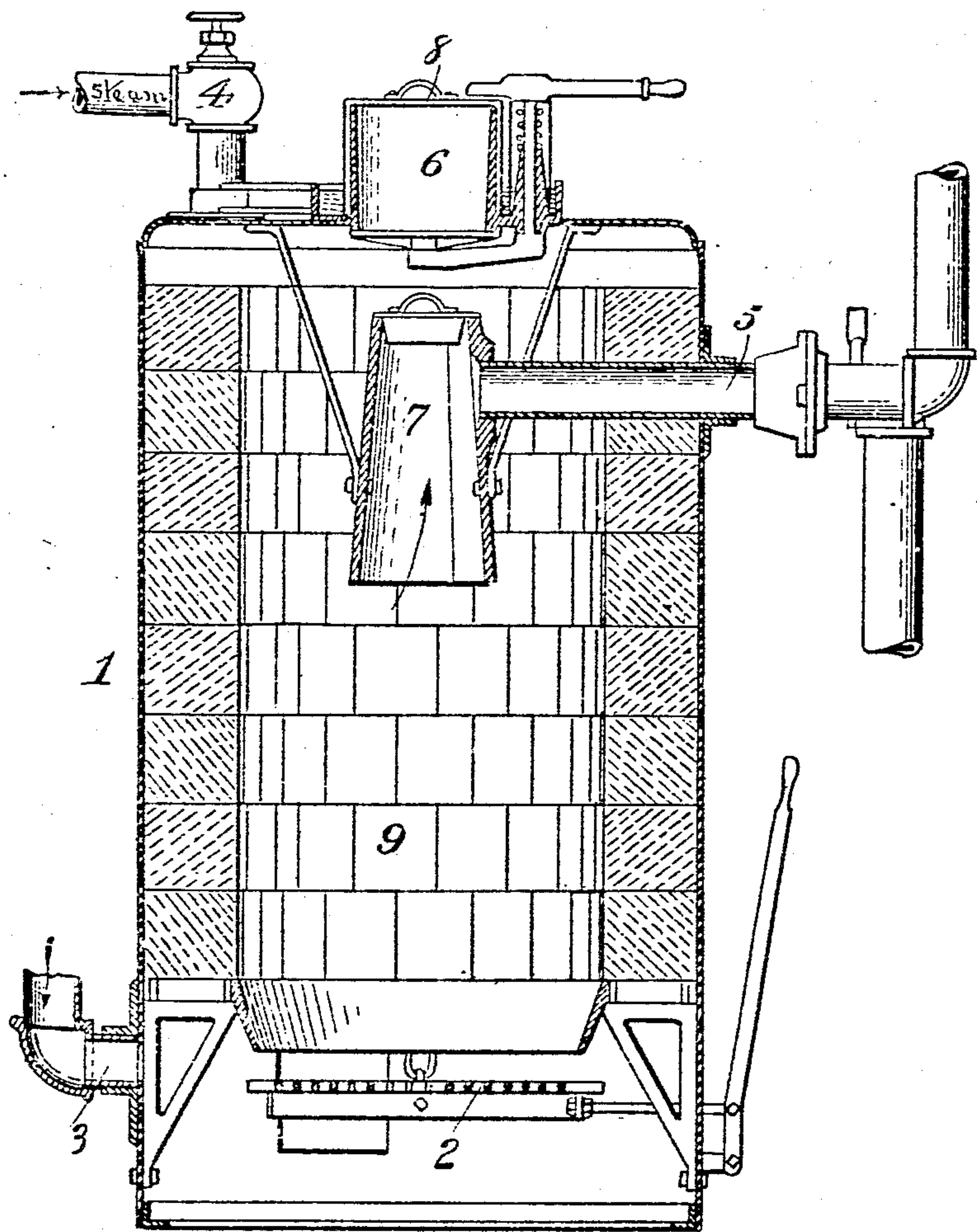


Fig. 1

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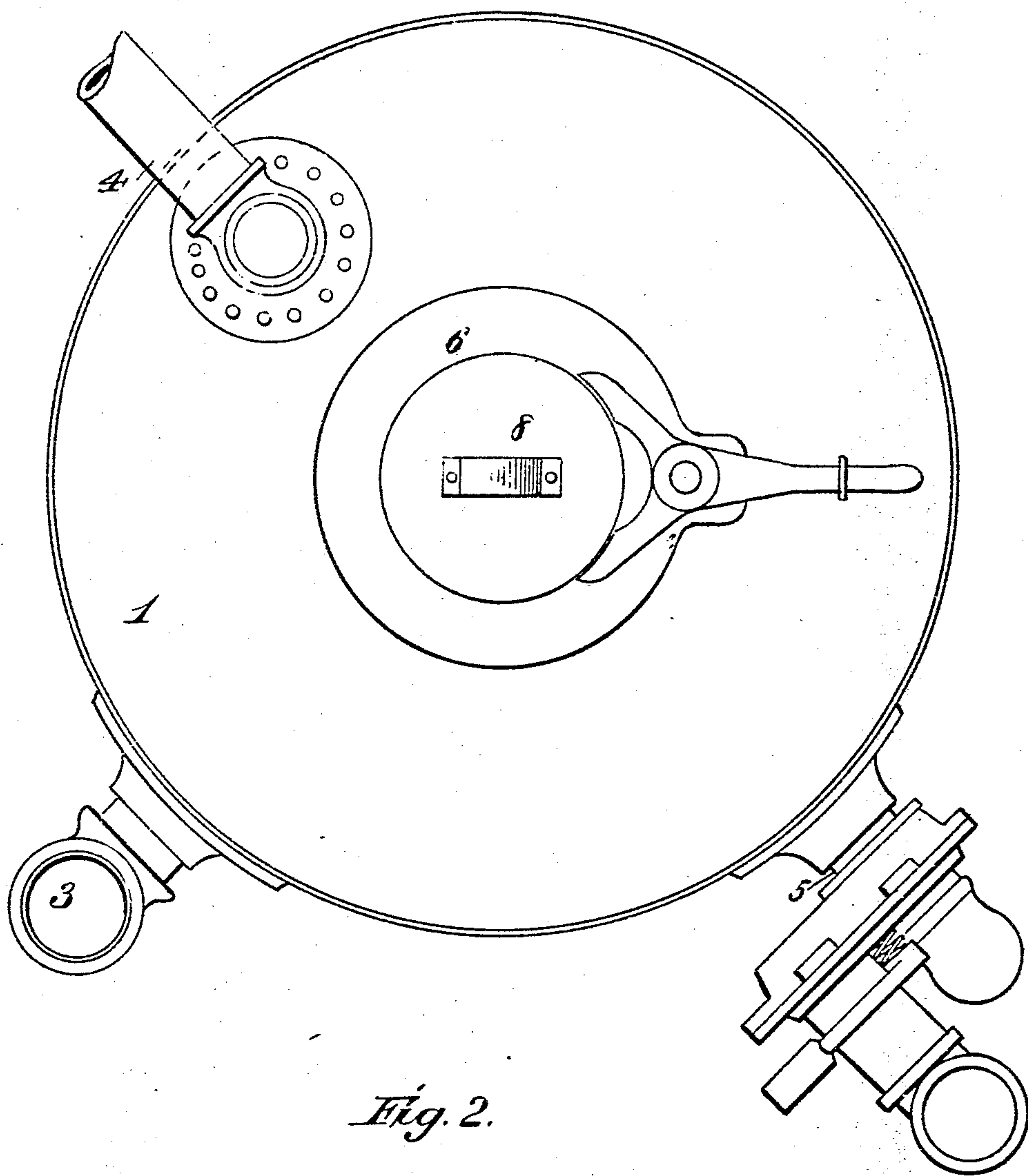


Fig. 2.

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UNITED STATES PATENT OFFICE.

HARRY F. SMITH, OF LEXINGTON, OHIO.

PROCESS OF FEEDING FUEL INTO GAS-PRODUCERS.

No. 880,411.

Specification of Letters Patent.

Patented Feb. 25, 1908.

Application filed March 29, 1907. Serial No. 365,293

To all whom it may concern:

Be it known that I, HARRY F. SMITH, a citizen of the United States, residing at Lexington, in the county of Richland and State of Ohio, have invented certain new and useful Improvements in Processes for Feeding Fuel into Gas-Producers, of which the following is a specification.

My invention relates to improvements in processes for feeding fuel into gas producers especially where the fuel contains relatively large proportions of volatile hydrocarbons. Its objects are, among other things, to provide principally for the maintenance of a perfectly continuous feeding action of the fuel, consequently of a uniform proportion of volatile hydrocarbons in the resulting gas; and to effect the carrying out of the same in a simple, ready and effective manner.

Said invention consists in delivering steam above, and into the fuel in the producer, or magazine, and suitably controlling such steam delivery as to preclude the distillation of hydrocarbons and their liberation in said fuel-magazine or producer above a certain point therein all substantially as hereinafter more fully disclosed and specifically pointed out by the claims.

In the accompanying drawing illustrating a machine or apparatus of a type adapted to carry out the objects of my invention or processes—Figure 1 is a sectional elevation thereof, and Fig. 2 is a plan view of the same.

By way of aiding an understanding of my invention or process, reference is made to said drawing, wherein 1 designates the usual producer-chamber. It has a fire-grate 2; an air and steam supply pipe 3 discharging thereinto about in a line with said fire-grate; a valved steam-supply pipe 4 delivering into the upper end of said chamber; a gas-delivery pipe or outlet 5; and a charging hopper 6. In the upper part of the chamber 1, about centrally thereof, is a funnel or pipe 7, suitably fixed and braced in position preferably as shown, and with which connects the outlet 5, said funnel or pipe being closed at its upper end by a suitable closure or cap 8. All of the foregoing parts, it will be understood, are of well known general outline, and therefore will not be further described herein in detail.

In applying or carrying out this process, it is essential that the outlet for the gas shall be at some distance from the top of the producer. This may be provided for by the use

of the pipe or funnel 7, or by means of ports (not shown) arranged in the producer-lining so as to take the gas off around the circumference. If a uniform percent of hydrocarbon-gases be required it is usually necessary to provide apparatus for mechanically feeding the fuel continuously in small amounts to the active portion of the fire and in this way rigidly limit the amount of hydrocarbons which may be liberated at any one time. If a fuel-magazine be employed containing a relatively large amount of such fuel, this magazine soon becomes heated through contact with the hot gases passing from the producer and from the general heating up of the apparatus, thereby liberating a comparatively large amount of volatile matter which amount continues to grow steadily less as the distillation of the fuel proceeds and is not by any means maintained uniform.

In my process the relatively large fuel magazine 9 is provided, as by all of the space in the producer-chamber, above a horizontal line touching the lower edge of the funnel or pipe 7. Distillation of hydrocarbons in this part of the apparatus is prevented by admitting or delivering from above a supply of steam into the fuel through the pipe 4. The amount of steam delivered is controlled by suitably actuating the valve of said pipe, which is to be just sufficient to prevent the liberation of the hydrocarbons in the fuel-magazine 9. The action of this steam can evidently not affect the fuel bed further down than the bottom edge of the pipe or funnel 7, since at this point the steam is swept out of the producer along with the outgoing gas. The action of the steam, thus introduced, is therefore to prevent the heating of the coal in the magazine 9, accordingly intercepting such heating action until the coal has passed below the magazine 9 and, as the coal can pass from said magazine into the active products of combustion below only in a regular manner and in proportion to the consumption of fuel, it is evident that, by this process, a perfectly continuous feeding of the fuel is maintained and consequently a uniform proportion of the volatile hydrocarbons in the resulting gas. Also from the foregoing, it will be noted that the carrying out of this process is practiced and effected with great simplicity, facility and economy.

I claim—

1. The herein described process for feeding fuel into gas producers; which consists in

ing the producer to a level so that the upper surface of the fuel is above the gas outlet and introducing a cooling medium at a point above the gas outlet.

5 2. The herein described process for feeding fuel into gas producers, which consists in filling the producer to a level so that the upper surface of the fuel is above the gas outlet and introducing a cooling medium at a point
10 above the gas outlet and causing the steam to pass down well through the unignited fuel to a point which is determined by the location of the gas outlet.

3. The herein described process for feeding
15 fuel into gas producers, which consists in charging the fuel into the producer magazine to a point above the mouth of the gas outlet and then introducing steam above the surface of the fuel, thereby subjecting all of
20 the fuel above the gas outlet to the action of

the steam and protecting all fuel below the gas outlet from the action of the steam introduced above the fuel.

4. The herein described process for feeding fuel into gas producers, which consists in 25 delivering steam in a regulated quantity to that portion of the fuel located above the gas outlet whereby to effectually cool the fuel as it approaches the active zone in the lower part of the producer and effectually preventing the distillation of hydro-carbons and the
30 coking of the coal at any point above the gas outlet.

In testimony whereof I affix my signature, in presence of two witnesses.

HARRY F. SMITH.

Witnesses:

GEO. H. TROUT,
THOMAS CURETON.